

WHAT IS CLAIMED IS:

1 1. A protected display case providing security
for exhibiting items and for storing items when items
are not on display comprising;

5 a) a top section having at least one
viewing window and defining a top volume;

 b) a bottom section having a
peripheral wall and defining a bottom
volume;

10 c) an access opening between the top
and bottom volumes;

15 d) a shelf disposed within the
display case and adapted to receive items
for viewing, the shelf having a raised
position in which the items on the shelf are
in the top volume and available for viewing
through the viewing window and a lowered
position in which the shelf and items are
disposed within the bottom volume;

20 e) a lifting mechanism disposed
within the bottom section and comprising a
motor, a gear assembly, and at least two
guides, the two guides being spaced apart

and aligned vertically adjacent to the peripheral wall of the bottom section, the motor, gear assembly, and guides working in cooperation to raise and lower the shelf while maintaining the shelf substantially horizontal;

f) a movable panel assembly having a retracted position in which the access opening is unobstructed and a deployed position in which the movable panel assembly substantially covers the access opening; and

g) at least one door situated on the protected display case such that the items on the shelf can be accessed.

2. The protected display case of Claim 1 wherein the viewing window is comprised of breakage resistant material and the peripheral wall of the bottom section is penetration resistant.

3. The protected display case as in Claim 1 wherein the movable panel assembly includes a plurality of individually hinged panels and at least one roller, the hinged panels being stored on said roller when the panel assembly is in a retracted position.

1 4. The protected display case of Claim 3
wherein the guides have a longitudinal axis, the
guides being rotatable about the longitudinal axis to
raise and lower the shelf.

1 5. The protected display case of Claim 3
wherein each of the guides comprise an elongated
track and the gear assembly being arranged to engage
the track and move the shelf along the track to
5 thereby raise and lower the shelf.

1 6. The protected display case as in Claim 4
wherein the protected display case has opposing sides,
a front, a back, a top, and a bottom and the movable
panel assembly moves in a direction from one side
5 toward the opposing side.

1 7. The protected display case as in Claim 5
wherein the protected display case has opposing sides,
a front, a back, a top, and a bottom and the movable
panel assembly moves in a direction from one side
5 toward the opposing side.

1 8. The protected display case as in Claim 4
wherein the protected display case has two sides, a
front, a back, a top, and a bottom and the movable
panel assembly moves in a direction from the back
5 toward the front.

1 9. The protected display case as in Claim 5
wherein the protected display case has two sides, a
front, a back, a top, and a bottom and the movable
panel assembly moves in a direction from the back
5 toward the front.

1 10. The protected display case as in Claim 4
wherein the protected display case has two sides, a
front, a back, a top, and a bottom and the movable
panel assembly moves in a direction from one side
5 toward the other side.

1 11. The protected display case as in Claim 5
wherein the protected display case has two sides, a
front, a back, a top, and a bottom and the movable
panel assembly moves in a direction from one side
5 toward the other side.

1 12. The protected display case as in Claim 4
wherein the protected display case has two sides, a
front, a back, a top, and a bottom and the movable
panel assembly moves in a direction from the back
5 toward the front.

1 13. The protected display case as in Claim 5
wherein the protected display case has two sides, a
front, a back, a top, and a bottom and the movable

panel assembly moves in a direction from the back
5 toward the front.

1 14. The protected display case as in Claim 4
further comprising switches for limiting the movement
of the movable panel assembly and the lifting
mechanism, and a motor for transitioning the movable
5 panel assembly into a closed position, and a roller
assembly having a biased spring for transitioning the
movable panel assembly into an opened position.

1 15. The protected display case as in Claim 5
further comprising switches for limiting the movement
of the movable panel assembly and the lifting
mechanism, and a panel motor for transitioning the
5 movable panel assembly into a closed position, and a
roller assembly having a biased spring for
transitioning the movable panel assembly into an
opened position.

1 16. The protected display case as in Claim 14
further including a power outlet and computer
controlled switch between the power outlet and the
motor and wherein the protected display case has a
5 computer access port for connecting the protected
display case to a computer such that the computer may

monitor and operate the lifting mechanism and movable panel assembly.

1 17. The protected display case as in Claim 15
further including a power outlet and computer
controlled switch between the power outlet and the
motor and wherein the protected display case has a
5 computer access port for connecting the protected
display case to a computer such that the computer may
monitor and operate the lifting mechanism and movable
panel assembly.

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5 18. The protected display case as in Claim 5
including a power outlet and computer controlled
switch between the power outlet and the motor and
wherein the protected display case has a computer
5 access port for connecting the protected display case
to a computer such that the computer may monitor and
operate the protected display case.

1 19. The protected display case as in Claim 4
wherein the protected display case has a manual
control panel adapted to control the operation of the
protected display case.

1 20. The protected display case as in Claim 5

wherein the protected display case has a manual control panel adapted to control the operation of the protected display case.

1 21. The protected display case as in Claim 4 wherein the protected display case has a manual control panel adapted to activate an alarm.

1 22. The protected display case as in Claim 5 wherein the protected display case has a manual control panel adapted to activate an alarm.

1 23. The protected display case as in Claim 4 wherein the shelf has sides includes a flexible peripheral band adapted to bend when contacting an obstruction adjacent the edge of the shelf when being
5 raised or lowered.

1 24. The protected display case as in Claim 5 wherein the shelf has sides includes a flexible peripheral band adapted to bend when contacting an obstruction adjacent the edge of the shelf when being
5 raised or lowered.

1 25. The protected display case as in Claim 4 wherein the movable panel assembly is adapted to respond to obstruction in the access opening and the movable panel assembly stops closing when an
5 obstruction is detected.

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1 26. The protected display case as in Claim 5
wherein the movable panel assembly is adapted to
respond to obstruction in the access opening and the
movable panel assembly stops closing when an
5 obstruction is detected.

1 27. The protected display case as in Claim 4
wherein the movable panel assembly comprises a
plurality of hinged panels.

1 28. The protected display case as in Claim 5
further comprising a plurality of movable panel
assemblies.

1 29. The protected display case as in Claim 1
wherein the lifting mechanism includes a stabilizing
assembly comprised of a pair of hat shaped rails
secured to the opposite sides of the bottom section
5 and a carriage having a movable shelf support and at
least two wheels which engage the hat shaped rail and
the wheels working in conjunction with the hat shaped
rails to restrict lateral movement by the carriage as
the carriage moves along the guides.

1 30. The protected display case as in Claim 29
wherein the guide is in the form of a hat shaped rail
having two edges and the gear assembly has at least
two wheels for each guide and the wheels being adapted

5 to engage the sides of the hat shaped rail thereby
limiting the deviation of the shelf.

1 31. The protected display case as in Claim 3
wherein the lifting mechanism further comprises:

5 a) a gear box having a first and
second output and the motor and the gear box
being disposed on the bottom of the shelf
and the motor being connected to the gear
box, the gear box being part of the gear
assembly;

b) a U-joint connected to each output
of said gear box;

c) a rod connected to each U-joint;

d) a coupling connected to each rod
opposing the U-joint;

e) a second rod connected to each
coupling;

f) a worm gear connected to the
second rod;

h) a gear adapted to receive the worm
gear;

20 i) a gear housing containing the gear
and worm gear and the gear housing
being secured to the shelf;

25 j) track teeth being part of the
track that work in conjunction with the gear
such that when the motor is operating the
motor causes the gear box to operate thereby
rotating the U-joint, rod, coupling, second
rod, and worm gear to rotate and the worm
gear and in turn causes the gear to operate
30 and the gear engages the track teeth causing
the shelf to move in relation to the track.

1 32. The protected display case as in Claim 2
wherein the movable panel assembly is comprised of a
plurality of individually hinged panels with the
hinged panels being stacked in an accordion like
5 manner when the movable panel assembly is in a
retracted position.

1 33. The protected display case as in Claim 5
further comprising a hat shaped rail and a carriage,
the carriage having a movable shelf support and at
least two wheels and the two wheels being adapted to
5 engage the hat shaped rail such that the carriage is
movable in a substantially vertical direction.

1 34. A carriage for use with a display unit
having a top section, a bottom section, and a shelf
movable between the top and bottom sections of the

display unit, and two hat shaped rails having sides,
5 the carriage comprising;

a base secured to the shelf;

at least two wheels adapted to engage
the sides of the hat shaped rails and the
wheels being secured to the base, and the
10 carriage and hat shaped rails operating in
conjunction to keep the shelf in a
substantially horizontal position while the
shelf is moving or in a stationary position.

35. A carriage for use with a display unit
having a top section, a bottom section, and a shelf
movable between the top and bottom sections of the
display unit, and the sides of two hat shaped rails,
5 the carriage comprising;

a movable shelf support secured to the
shelf;

at least two wheels adapted to engage
the sides of each hat shaped rail and the
10 wheels being secured to the movable shelf
support and the carriage and the sides of
each hat shaped rail operating in
conjunction to keep the shelf in a

substantially horizontal position while the
shelf is moving or in a stationary position.

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